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ARMY ENVIRONMENTAL HYGIENE AGENCY ABERDEEN PROVING GR--ETC F/G 6/20  
TOPICAL HAZARD EVALUATION PROGRAM OF CANDIDATE INSECT REPELLENT--ETC(U)  
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**UNITED STATES ARMY  
ENVIRONMENTAL HYGIENE  
AGENCY**

**ABERDEEN PROVING GROUND, MD 21010**

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TOPICAL HAZARD EVALUATION PROGRAM OF CANDIDATE INSECT REPELLENTS  
AI3-37128a, AI3-37129a, AI3-37136a, AI3-37137a, AND AI3-37138a,  
US DEPARTMENT OF AGRICULTURE PROPRIETARY COMPOUNDS,  
STUDY NUMBERS 75-51-0083-79, 75-51-0084-79, 75-51-0087-79,  
75-51-0088-79, AND 75-51-0089-79  
FEBRUARY 1978 - JUNE 1979

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Allen W. Singer

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Hazard evaluations of AI3-37128a, AI3-37129a, AI3-37136a, AI3-37137a, and AI3-37138a were performed by means of laboratory studies using New Zealand White rabbits. The technical grade compounds caused moderately severe eye irritation, but no primary skin irritation.		

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DEPARTMENT OF THE ARMY  
U. S. ARMY ENVIRONMENTAL HYGIENE AGENCY  
ABERDEEN PROVING GROUND, MARYLAND 21010

CPT Singer/jg/AUTOVON  
584-3980

17 AUG 1979

HSE-LT-T/WP

SUBJECT: Topical Hazard Evaluation Program of Candidate Insect Repellents  
AI3-37128a, AI3-37129a, AI3-37136a, AI3-37137a, and AI3-37138a, US  
Department of Agriculture Proprietary Compounds, Study Numbers  
75-51-0083-79, 75-51-0084-79, 75-51-0087-79, 75-51-0088-79, and  
75-51-0089-79, February 1978 - June 1979

Executive Secretary  
Armed Forces Pest Control Board  
Forest Glen Section, WRAMC  
Washington, DC 20012

A summary of the pertinent findings and recommendations of the inclosed  
report follows:

Hazard Evaluations of AI3-37128a, AI3-37129a, AI3-37136a, AI3-37137a, and  
AI3-37138a were performed by means of laboratory studies using New Zealand  
White rabbits. The technical grade compounds caused moderately severe eye  
irritation, but no primary skin irritation. It is recommended that  
AI3-37128a, AI3-37129a, AI3-37136a, AI3-37137a, and AI3-37138a, US Department  
of Agriculture proprietary compounds, not be approved for further testing as  
candidate insect repellents. However, if these compounds show pest repellent  
properties that are a significant improvement over currently available  
compounds, it is requested that they or their modified formulations be  
submitted for further toxicological evaluations in their proposed use  
formulations and/or concentration.

FOR THE COMMANDER:

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DEPARTMENT OF THE ARMY  
U. S. ARMY ENVIRONMENTAL HYGIENE AGENCY  
ABERDEEN PROVING GROUND, MARYLAND 21010

HSE-LT-T/WP

TOPICAL HAZARD EVALUATION PROGRAM OF CANDIDATE INSECT REPELLENTS  
AI3-37128a, AI3-37129a, AI3-37136a, AI3-37137a, AND AI3-37138a,  
US DEPARTMENT OF AGRICULTURE PROPRIETARY COMPOUNDS  
STUDY NUMBERS 75-51-0083-79, 75-51-0084-79, 75-51-0087-79,  
75-51-0088-79, AND 75-51-0089-79  
FEBRUARY 1978 - JUNE 1979

1. AUTHORITY.

a. Letter, US Department of Agriculture - Agricultural Research Service, Southern Region, Insects Affecting Man Research Laboratory, Gainesville, Florida, 9 February 1978.

b. Memorandum of Understanding between the Department of the Army; Office of The Surgeon General; the US Army Health Services Command; the US Army Environmental Hygiene Agency; the Armed Forces Pest Control Board; and the US Department of Agriculture, effective 1970 with Amendment No. 1, effective August 1974.

2. REFERENCE. Toxicology Division Procedural Guide, USAEHA, 1972, revised 1976.

3. PURPOSE. The purpose of this program is to provide guidance for further entomological testing of the candidate insect repellents AI3-37128a, AI3-37129a, AI3-37136a, AI3-37137a, and AI3-37138a.

4. SUMMARY OF FINDINGS. Hazard evaluations of the candidate insect repellents AI3-37128a, AI3-37129a, AI3-37136a, AI3-37137a, and AI3-37138a, US Department of Agriculture (USDA) proprietary compounds, were conducted by this Agency using New Zealand White rabbits for skin and eye irritation studies. A tabular presentation of animal toxicity data developed in this Agency follows:\*†

\* In conducting the studies described in this report, the investigators adhered to the "Guide for the Care and Use of Laboratory Animals," US Department of Health, Education, and Welfare Publication No. (NIH) 74-23, revised 1972.

† The experiments reported herein were performed in animal facilities fully accredited by the American Association for Accreditation of Laboratory Animal Care.

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Topical Hazard Eval Study Nos. 75-51-0083-79, 75-51-0084-79, 75-51-0087-79, 75-51-0088-79, and 75-51-0089-79, Feb 78-Jun 79

Test	Results	Interpretation
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#### SKIN IRRITATION STUDIES

##### New Zealand White Rabbits

Single 24-hour application of an 0.5 ml technical grade compound applied to intact and abraded skin of six rabbits.	Compounds AI3-37128a, AI3-37129a, AI3-37136a, AI3-37137a, and AI3-37138a produced no primary irritation of the intact or abraded skin.	USAEHA Category I (ref Appendix)
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#### EYE IRRITATION STUDIES

##### New Zealand White Rabbits

Single 24-hour application of 0.1 ml technical grade compound to one eye of each of six rabbits. Eyes are examined and graded at 24, 48, and 72 hours, and again at 7 days.	Compounds AI3-37128a, AI3-37129, AI3-37136a, AI3-37137a and AI3-37138a produced moderately severe corneal and conjunctival irritation and damage detectable at 72 hours. All detectable changes had cleared by 7 days.	USAEHA Category E (ref Appendix)
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5. CONCLUSION... The technical grade compounds caused moderately severe corneal and conjunctival irritation and damage and do not qualify as nonhazardous insect repellents. Since these compounds were not irritating to the skin, it is possible that residual impurities in the compounds resulted in the observed ocular irritation.



Topical Hazard Eval Study Nos. 75-51-0083-79, 75-51-0084-79, 75-51-0087-79, 75-51-0088-79, and 75-51-0089-79, Feb 78-Jun 79

6. RECOMMENDATIONS. Under the provisions of the Memorandum of Understanding (paragraph 1b), it is recommended that AI3-37128a, AI3-37129a, AI3-37136a, AI3-37137a, and AI3-37138a not be approved for further testing as candidate insect repellents. If, however, any of these compounds should show a significant improvement in pest repellent properties over currently available compounds, it is suggested that they be purified through activated charcoal to remove contaminants, and resubmitted in their proposed use formulations and/or concentrations.

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APPENDIX

TOPICAL HAZARD EVALUATION PROGRAM  
DEFINITIONS OF CATEGORIES OF COMPOUNDS BEING  
CONSIDERED FOR ACUTE SKIN APPLICATION

CATEGORY I - Compounds producing no primary irritation of the intact skin or no greater than mild primary irritation of the skin surrounding an abrasion. (INTERPRETATION: No restriction for acute application to the human skin.)

CATEGORY II - Compounds producing mild primary irritation of the intact skin and the skin surrounding an abrasion. (INTERPRETATION: Should be used only on human skin found by examination to have no abrasions or may be used as a clothing impregnant.)

CATEGORY III - Compounds producing moderate primary irritation of the intact skin and the skin surrounding an abrasion. (INTERPRETATION: Should not be used directly on the skin without a prophetic patch test having been conducted on humans to determine irritation potential to human skin. May be used without patch testing, with extreme caution, as clothing impregnants. Compound should be resubmitted in the form and at the intended use concentration so that its irritation potential can be reexamined using other test techniques on animals.)

CATEGORY IV - Compounds producing moderate to severe primary irritation of the intact skin and of the skin surrounding an abrasion and, in addition, producing necrosis, vesiculation, and/or eschars. (INTERPRETATION: Should be resubmitted for testing in the form and at the intended use concentration. Upon resubmission, its irritation potential will be reexamined using other test techniques on animals, prior to possible prophetic patch testing in humans, at concentrations which have been shown not to produce primary irritation in animals.)

CATEGORY V - Compounds impossible to classify because of staining of the skin or other masking effects owing to physical properties of the compound. (INTERPRETATION: Not suitable for use on humans.)

EYE CATEGORIES:

A. Compounds non-injurious to the eye. INTERPRETATION: Irritation of human eyes is not expected if the compound should accidentally get into the eyes, provided it is washed out as soon as possible.

B. Compounds producing mild injury to the cornea. INTERPRETATION: Should be used with caution around the eyes.

C. Compounds producing mild injury to the cornea, and in addition some injury to the conjunctiva. INTERPRETATION: Should be used with caution around the eyes and mucosa.

D. Compounds producing moderate injury to the cornea. INTERPRETATION: Should be used with extreme caution around the eyes.

E. Compounds producing moderate injury to the cornea, and in addition producing some injury to the conjunctiva. INTERPRETATION: Should be used with extreme caution around the eyes and mucosa.

F. Compounds producing severe injury to the cornea and to the conjunctiva. INTERPRETATION: Should be used with extreme caution. It is recommended that use be restricted to areas other than the face.